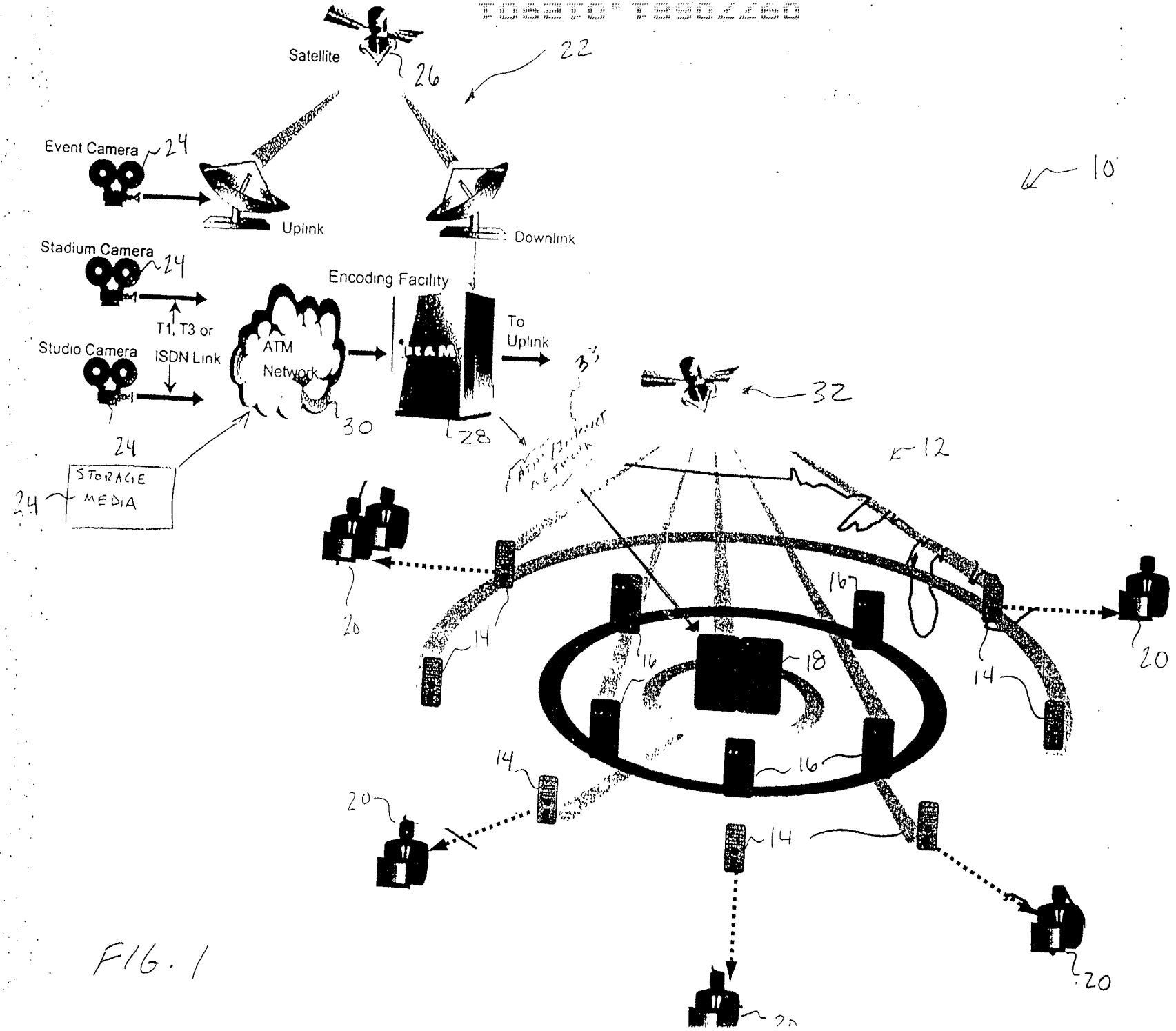

Satellite
26
22
Event Camera
24
Uplink
Downlink
10
Stadium Camera
24
Encoding Facility
T1, T3 or
ISDN Link
ATM
Network
To
Uplink
Studio Camera
24
30
28
32
12
24
STORAGE
MEDIA
20
14
16
18
16
14
20
14
20
14
20

FIG. 1

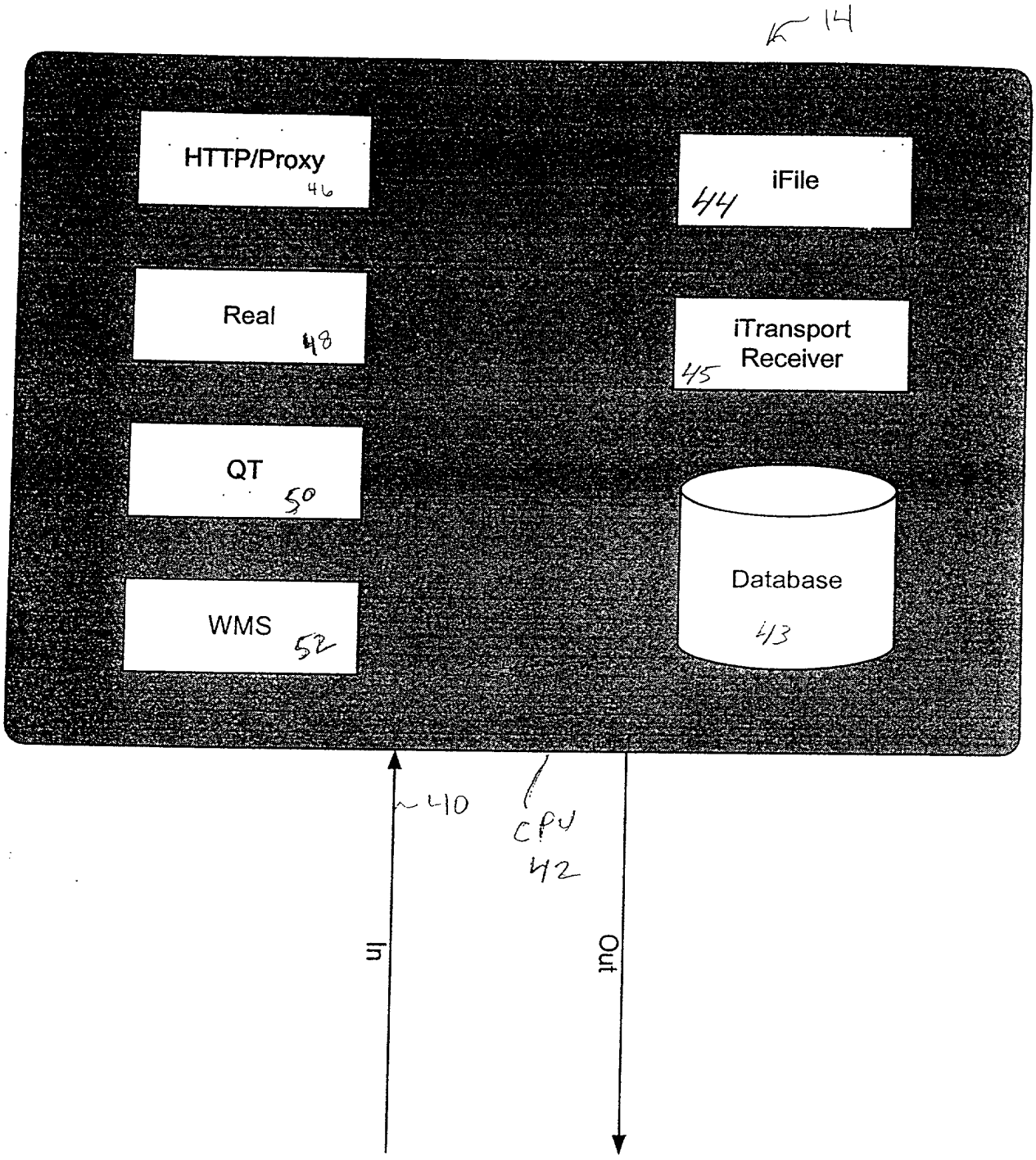

14
HTTP/Proxy
46
iFile
44
Real
48
iTransport
Receiver
45
QT
50
Database
43
WMS
52
40
CPU
42
In
Out

FIG. 2

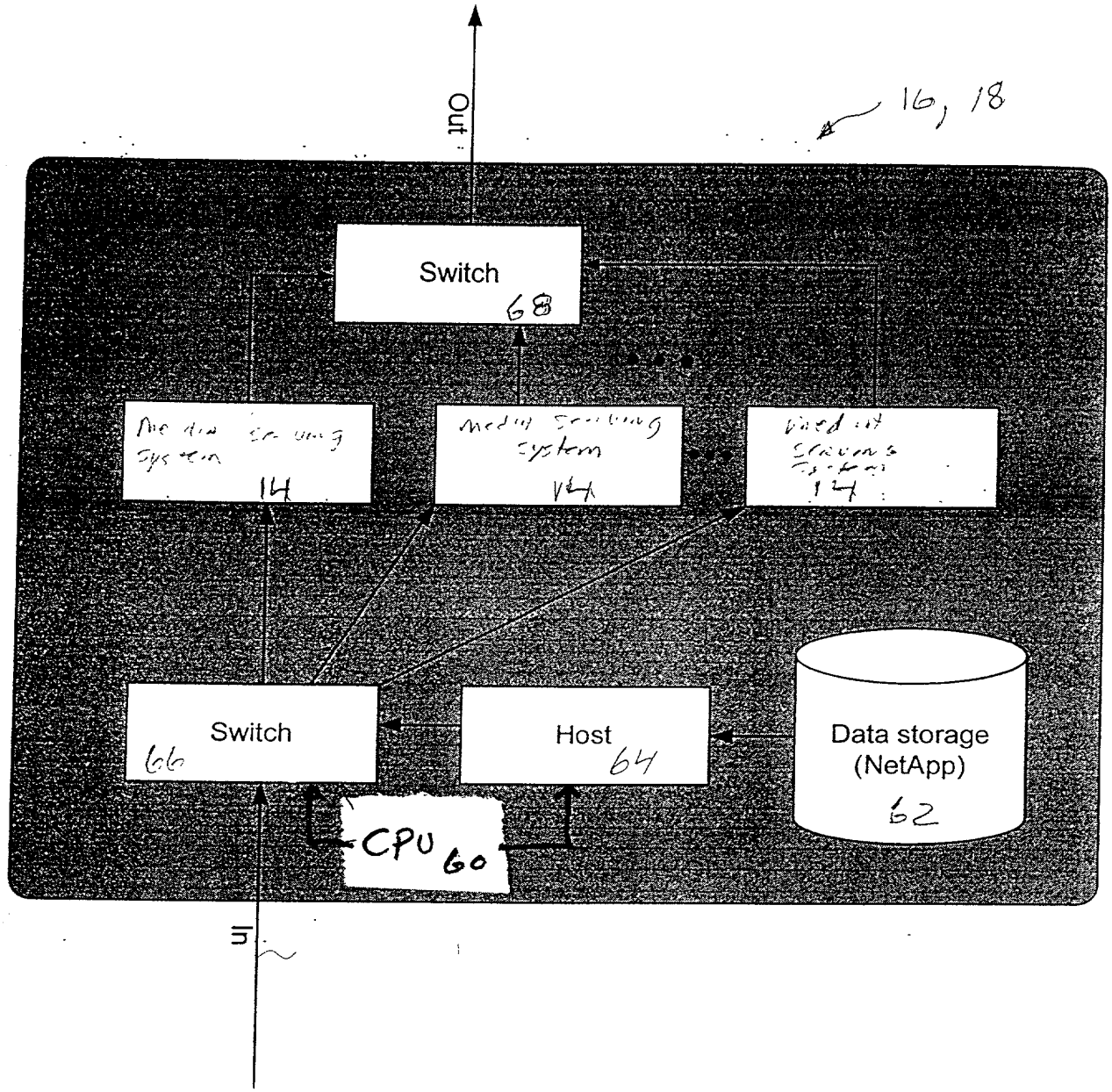

Out
16, 18
Switch
68
Media Streaming System
14
Media Streaming System
14
Media Streaming System
14
Switch
66
Host
64
Data storage
(NetApp)
62
CPU 60
In

FIG. 3

Data Flow - Local

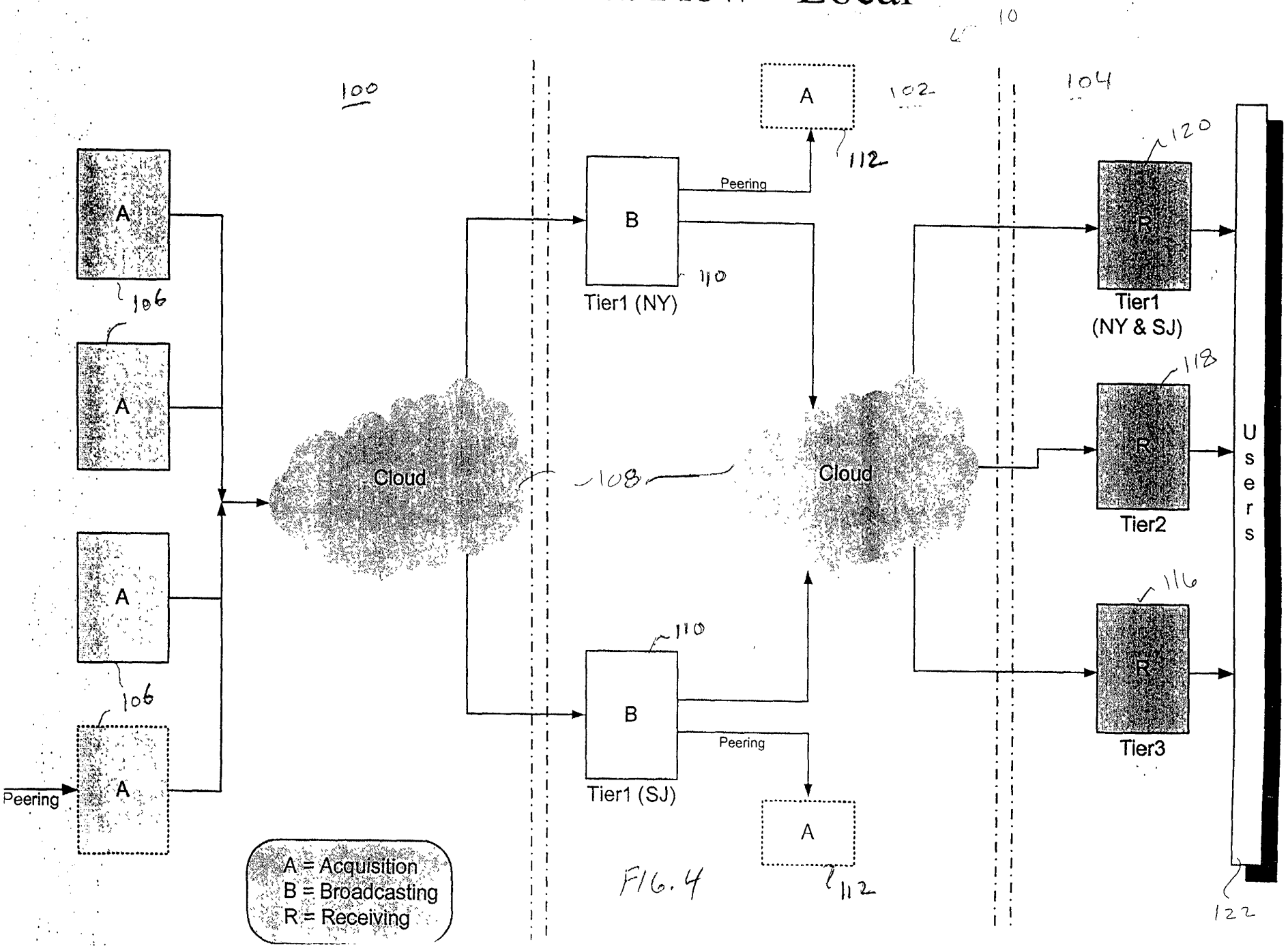


FIG. 4

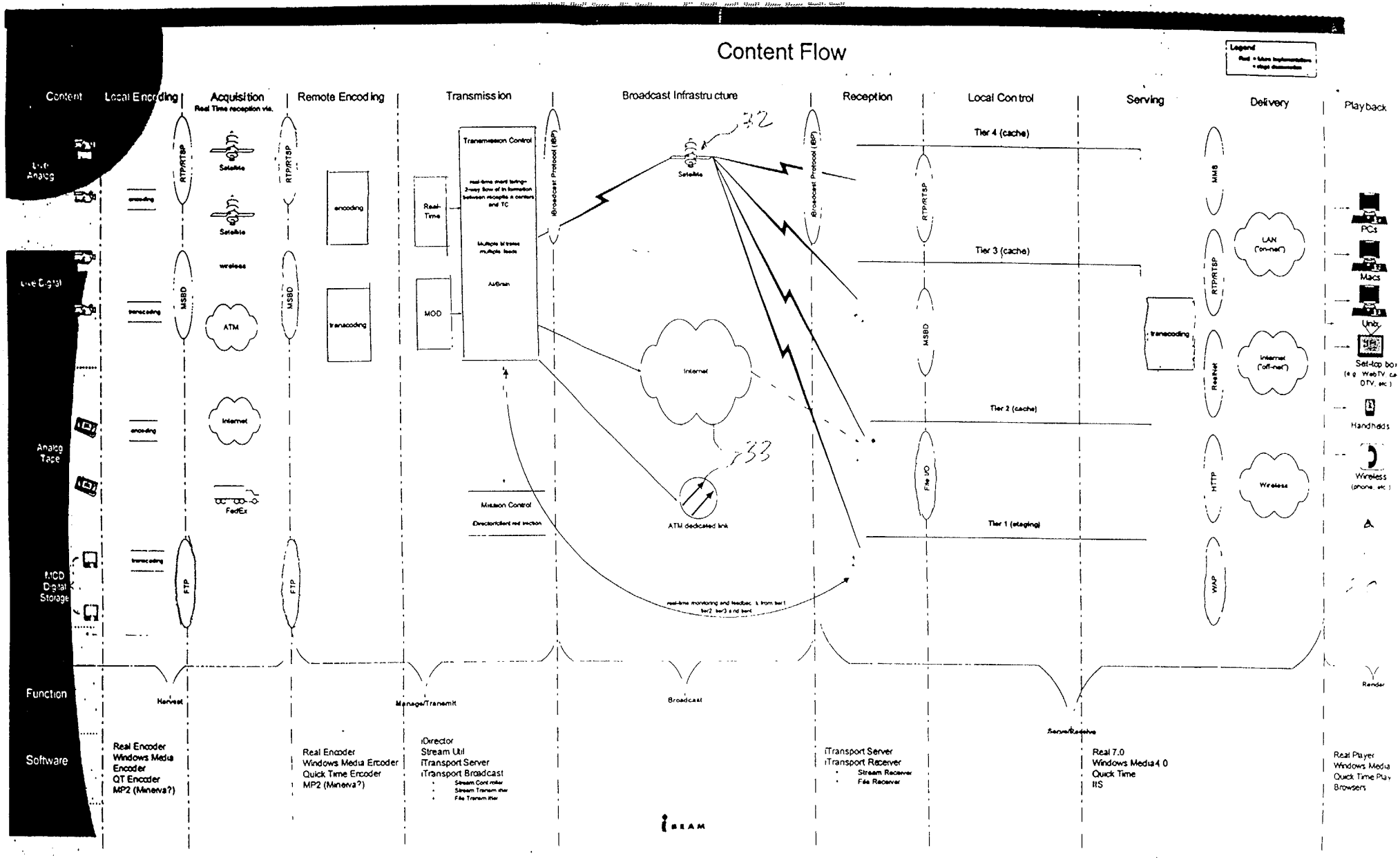
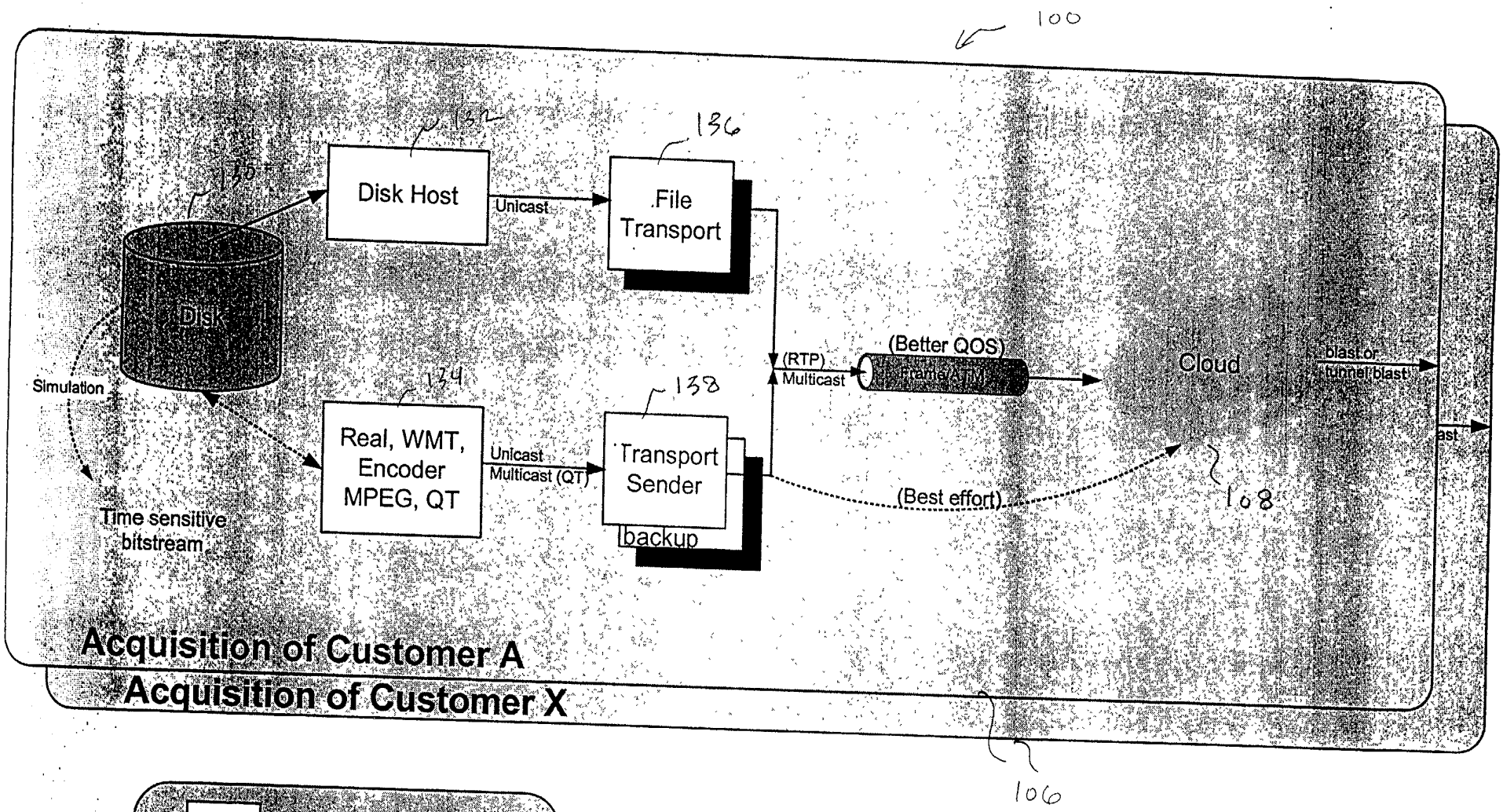

Content Flow
Content
Local Encoding
Acquisition
Real Time reception via
Remote Encoding
Transmission
Broadcast Infrastructure
Reception
Local Control
Serving
Delivery
Playback
Live Analog
Live Digital
Analog Tape
MOD Digital Storage
Function
Software
RTP/RTSP
MSBD
FTP
Satellite
wireless
ATM
Internet
FedEx
encoding
transcoding
Transmission Control
Real-Time
MOD
Multiple bitrates multiple feeds
Mission Control
Broadcast Protocol (IBP)
ATM dedicated link
Tier 4 (cache)
Tier 3 (cache)
Tier 2 (cache)
Tier 1 (staging)
File I/O
MMS
RealNet
HTTP
WAP
LAN ("on-net")
Internet ("off-net")
Wireless
PCs
Macs
Unix
Set-top box
Handhelds
Wireless
Render
Harvest
Manage/Transmit
Broadcast
Real Encoder
Windows Media Encoder
QT Encoder
MP2 (Minerva?)
Real Encoder
Windows Media Encoder
Quick Time Encoder
MP2 (Minerva?)
iDirector
Stream Util
iTransport Server
iTransport Broadcast
iTransport Server
iTransport Receiver
Stream Receiver
File Receiver
Real 7.0
Windows Media 4.0
Quick Time
IIS
Real Player
Windows Media
Quick Time Play
Browsers
100
102
104

FIG. 5

Data Flow - Acquisition



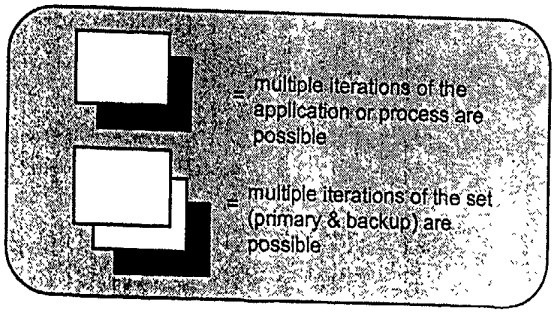


FIG. 6

Data Flow - Broadcasting

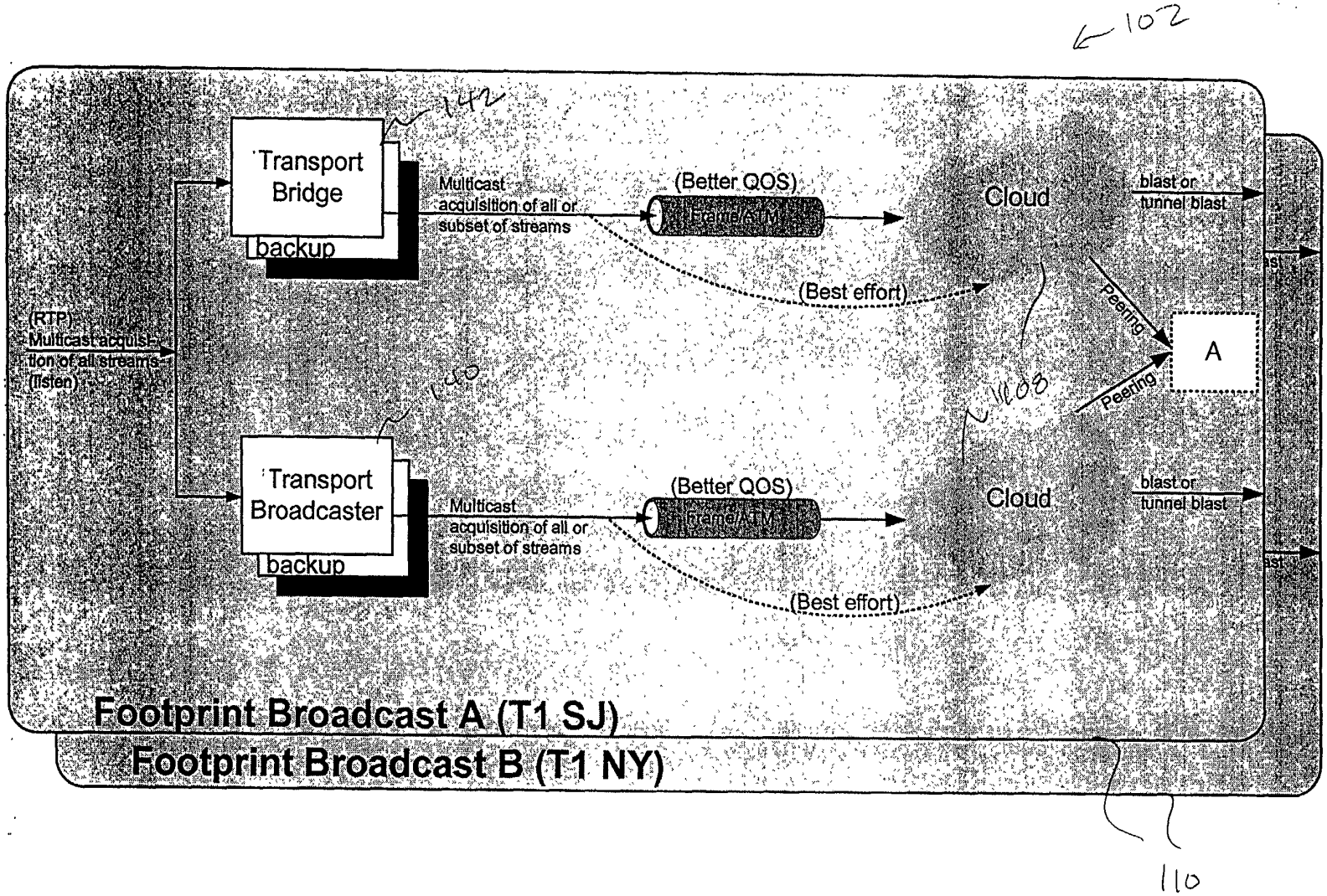


FIG. 7

Data Flow - Reception

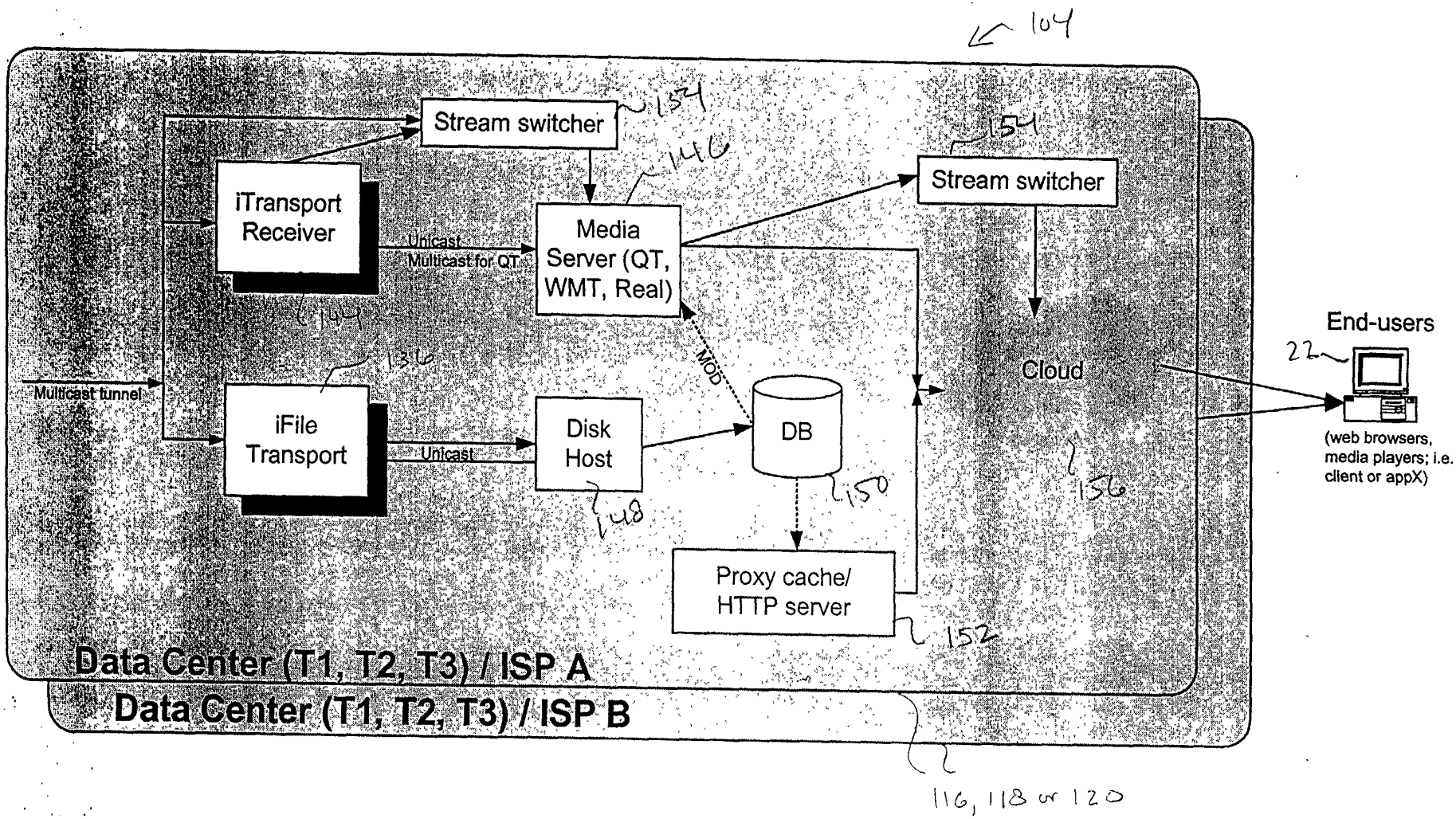


FIG. 8

Abstract Transport Data Management Overview

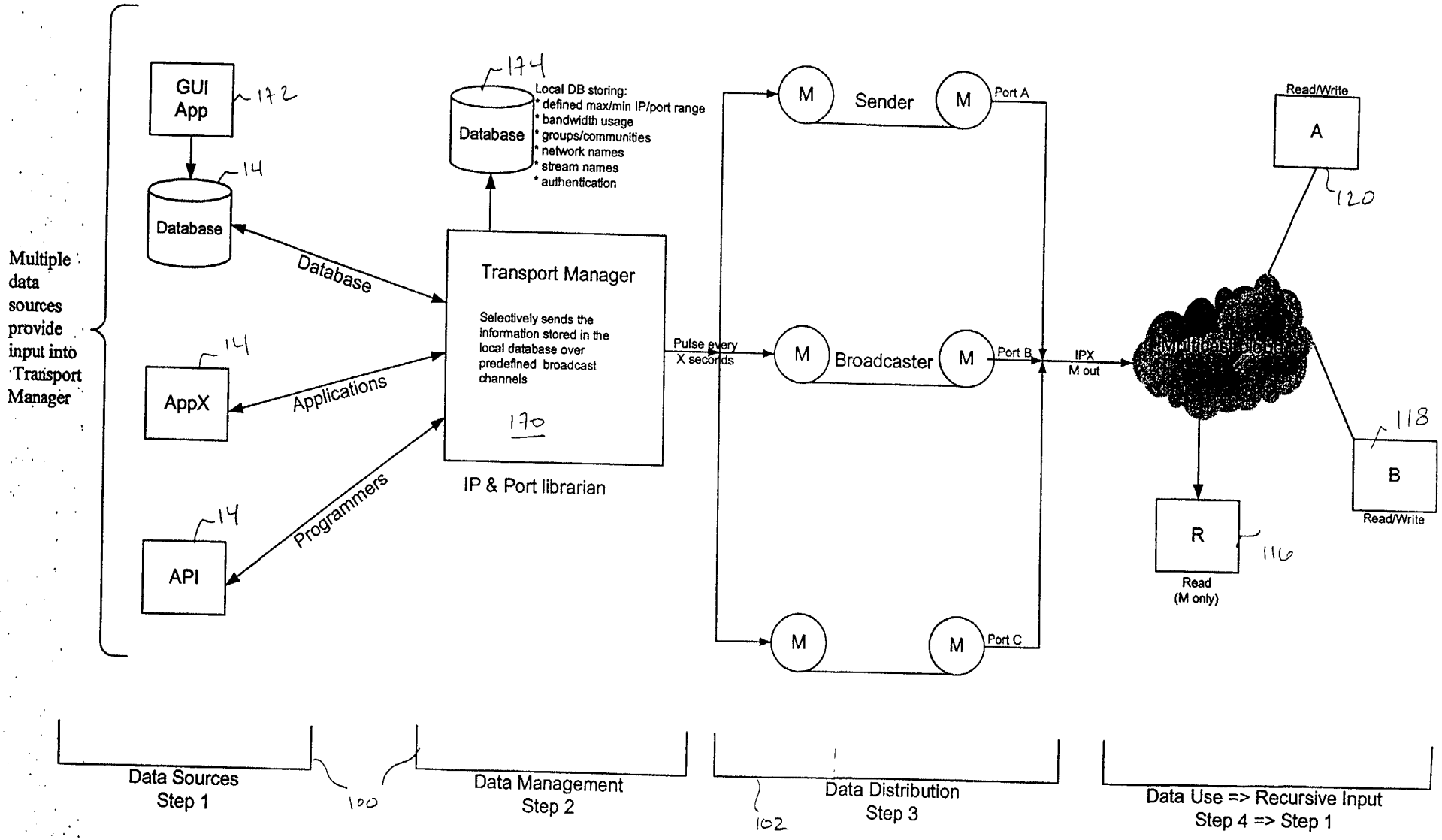


FIG. 9

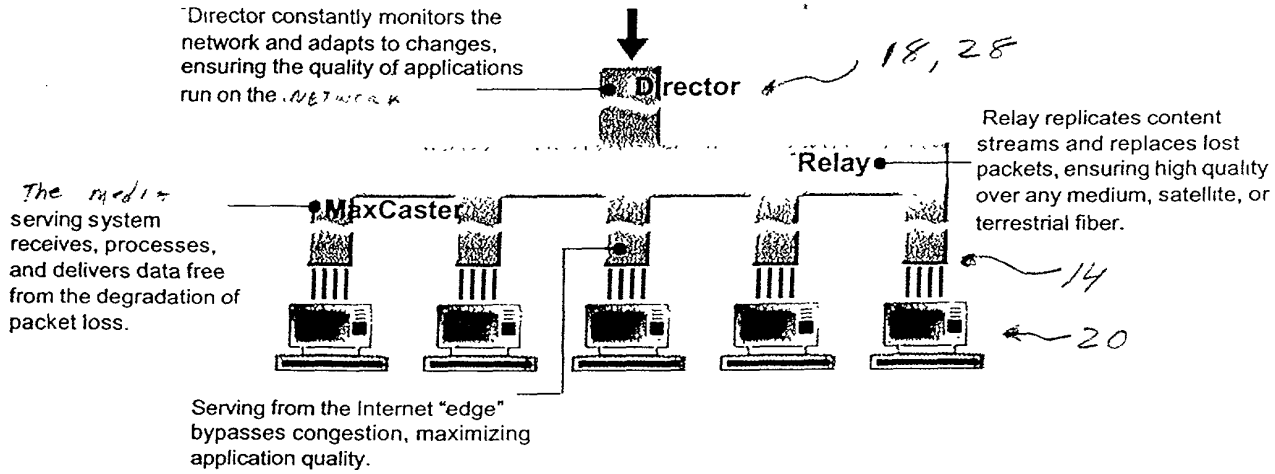

Director constantly monitors the network and adapts to changes, ensuring the quality of applications run on the network
Director
18, 28
Relay replicates content streams and replaces lost packets, ensuring high quality over any medium, satellite, or terrestrial fiber.
Relay
The media serving system receives, processes, and delivers data free from the degradation of packet loss.
MaxCaster
14
20
Serving from the Internet "edge" bypasses congestion, maximizing application quality.

FIG. 10

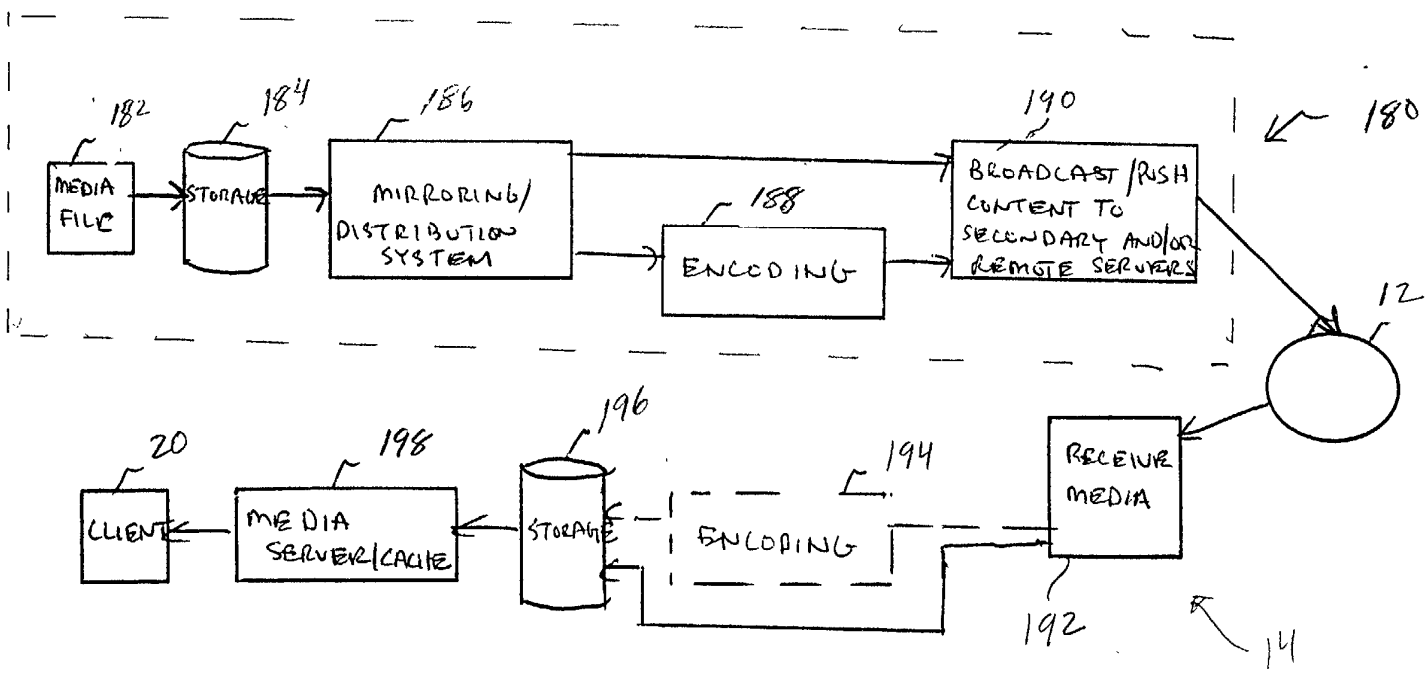

182
184
186
190
180
MEDIA FILE
STORAGE
MIRRORING/ DISTRIBUTION SYSTEM
188
ENCODING
BROADCAST/PUSH CONTENT TO SECONDARY AND/OR REMOTE SERVERS
12
196
20
198
194
RECEIVE MEDIA
CLIENT
MEDIA SERVER/CACHE
STORAGE
ENCODING
192
14

FIG. 11

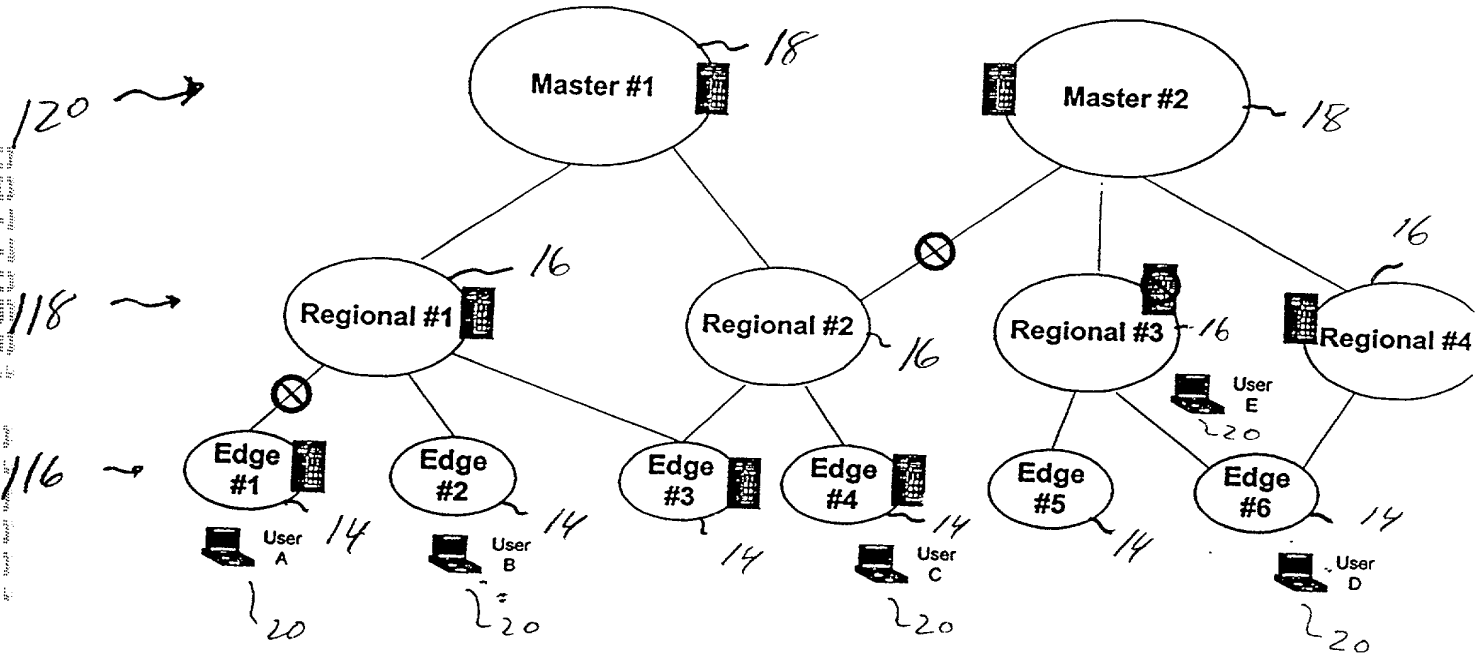

120
118
116
Master #1
18
Master #2
18
Regional #1
16
Regional #2
16
Regional #3
16
Regional #4
16
Edge #1
Edge #2
Edge #3
Edge #4
Edge #5
Edge #6
14
User A
User B
User C
User D
User E
20

FIG. 12